

App. No. 10/065,552
Amendment dated August 17, 2005
Reply to Office action of May 17, 2005

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the present application.

Listing of Claims:

Claim 1 (canceled)

Claim 2 (currently amended): The carrier concentration profiling method set forth in claim ~~[[1]]~~ 14, wherein an aqueous EDTA solution is utilized as the liquid electrode.

Claim 3 (original): The carrier concentration profiling method set forth in claim 2, wherein the aqueous EDTA solution contains 80% or more EDTA.

Claim 4 (currently amended): The carrier concentration profiling method set forth in claim ~~[[1]]~~ 14, wherein liquid tiron is utilized as the liquid electrode.

Claim 5 (currently amended): The carrier concentration profiling method set forth in claim ~~[[1]]~~ 14, wherein a metal Ga melt is utilized as the liquid electrode.

Claim 6 (canceled)

Claim 7 (withdrawn): A compound semiconductor wafer including an In-containing-compound semiconductor surface layer, wherein carrier concentration in the wafer is non-invasively profiled, whereby its carrier concentration having been non-invasively profiled the wafer can be employed as it is for device processing.

Claim 8 (withdrawn—currently amended): A ~~compound~~ semiconductor wafer composed of an In-containing compound and superficially onto which at least

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one including an In-containing-compound semiconductor surface layer has been heteroepitaxially grown, wherein carrier concentration in the wafer is non-invasively profiled according to the method set forth in claim ~~[[1]]~~ 14, whereby its carrier concentration having been non-invasively profiled the wafer can be employed as it is for device processing.

Claim 9 (withdrawn—currently amended): A compound semiconductor wafer composed of an In-containing compound and superficially onto which at least one including an In-containing-compound semiconductor surface layer has been heteroepitaxially grown, wherein carrier concentration in the wafer is non-invasively profiled according to the method set forth in claim 2, whereby its carrier concentration having been non-invasively profiled the wafer can be employed as it is for device processing.

Claim 10 (withdrawn—currently amended): A compound semiconductor wafer composed of an In-containing compound and superficially onto which at least one including an In-containing-compound semiconductor surface layer has been heteroepitaxially grown, wherein carrier concentration in the wafer is non-invasively profiled according to the method set forth in claim 3, whereby its carrier concentration having been non-invasively profiled the wafer can be employed as it is for device processing.

Claim 11 (withdrawn—currently amended): A compound semiconductor wafer composed of an In-containing compound and superficially onto which at least one including an In-containing-compound semiconductor surface layer has been heteroepitaxially grown, wherein carrier concentration in the wafer is non-invasively profiled according to the method set forth in claim 4, whereby its carrier concentration having been non-invasively profiled the wafer can be employed as it is for device processing.

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Claim 12 (withdrawn—currently amended): A ~~compound~~ semiconductor wafer composed of an In-containing compound and superficially onto which at least one including an In-containing-compound semiconductor surface layer has been heteroepitaxially grown, wherein carrier concentration in the wafer is non-invasively profiled according to the method set forth in claim 5, whereby its carrier concentration having been non-invasively profiled the wafer can be employed as it is for device processing.

Claim 13 (canceled)

Claim 14 (currently amended): A non-invasive, semiconductor-wafer carrier concentration profiling method, comprising steps of:

utilizing equipping a C/V analyzer including with a light-receiving-windowless electrolyte cell having an opening for electrolyte-wafer contact; to profile non-invasively, without using photo etching, carrier concentration in a semiconductor substrate composed of an In-containing compound and superficially onto which at least one In-containing compound semiconductor layer has been heteroepitaxially grown, the method consisting essentially of the steps of:

filling the cell with one a liquid selected from an aqueous EDTA solution containing 80% or more EDTA, liquid tiron, and a metal Ga melt electrode;

preparing a semiconductor wafer composed of an In-containing compound and superficially onto which at least one In-containing-compound semiconductor layer has been heteroepitaxially grown;

placing the said wafer on an said opening in the electrolyte cell so as to put the liquid in superficial contact with the wafer to allow the liquid to function as an electrode; and

employing applied voltages, including at least a maximum voltage that surpasses 10V but is not greater than about 60 V, to profile the wafer's C/V characteristics.